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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,227	05/11/2005	Franco Codignola	0001824USU/2258	4406

27623 7590 04/18/2007  
OHLANDT, GREELEY, RUGGIERO & PERLE, LLP  
ONE LANDMARK SQUARE, 10TH FLOOR  
STAMFORD, CT 06901

EXAMINER
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NWAONICHA, CHUKWUMA O

ART UNIT	PAPER NUMBER
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1621

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.		Applicant(s)	
	10/507,227		CODIGNOLA, FRANCO	
	Examiner		Art Unit	
	Chukwuma O. Nwaonicha		1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 8 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6 and 8-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-3, 8-13 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 5, 6, and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Current Status*

1. This action is responsive to Applicants' amendment of 8 January 2007.
2. Receipt and entry of Applicants' amendment is acknowledged.
3. Claims 1-3, 5, 6 and 8-20 are under active consideration in the instant application.
4. The rejection of claims 5, 6 and 8-20 under 35 U.S.C. 112 for the reasons set forth in the previous Office Action of 7/5/06 is withdrawn following applicants amendment.
5. The rejection claim 17 under 35 U.S.C. 102(b) as being anticipated by Codignola, {US 3,171,860} for the reasons set forth in the previous Office Action of 7/5/06 is withdrawn following applicants amendment.
6. The rejection claim 17 under 35 U.S.C. 102(b) as being anticipated by Boncheva et al., {Oxidation of Cumene in the Presence of Anion Exchange Resins, Neft i Khimiya, 1977, 11, 15-18} for the reasons set forth in the previous Office Action of 7/5/06 is maintained.

Applicants' argument and amendment filed 8 January 2007 have been fully considered but they are not persuasive. Applicants argue that the claims require that the cumene hydroperoxide be free of inorganic cations. It is a well established technique in chemical process that the crude products in any chemical reaction are purified to obtain pure final product; hence, the cumene hydroperoxide product of the prior art is free of impurity of inorganic cations. Applicants further contend that

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Boncheva discloses a process for oxidizing cumene to cumene peroxide in the presence of a weakly alkaline anionic resin, and that the weakly alkaline anionic resin of Boncheva neutralizes acids present in the cumene starting material by exchanging its cations, for example  $\text{Na}^+$ , with  $\text{H}^+$  cations coming from the acids, resulting in contamination of the reaction environment with inorganic cations. These arguments are not convincing because the exchange of metal ion with the acidic proton is not the issue; the issue is that applicants are claiming already known compound. Claim 17 is considered product-by-process claim as indicated the previous Office Action.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 3, 8, 9, 10, 12 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2, 3, 8, 9, 10, 12 and 19 are indefinite because of the phrases "preferably and substantially". It is required that applicants set limit to their claim. Correction is required.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board

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of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 19 recites the broad recitation lower than 2% by weight, and the claim also recites preferably lower or equal to 1.5% by weight which is the narrower statement of the range/limitation.

### ***Claim Rejections - 35 USC § 103***

The rejection claims 1-3, 5, 6 and 8-20 under 35 U.S.C. 103(a) as being unpatentable over Codignola, {US 3,171,860} in view of Boncheva et al., {Oxidation of Cumene in the Presence of Anion Exchange Resins, Neft i Khimiya, 1977, 11, 15-18} for the reasons set forth in the previous Office Action of 7/5/06 is withdrawn in favor of a new rejection.

### ***New Rejection***

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having

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ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 9, 10, 11, 13 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boncheva et al., {Oxidation of Cumene in the Presence of Anion Exchange Resins, *Neft i Khimiya*, 1977, 11, 15-18}.

Applicant claims a process for the synthesis of cumene hydroperoxide, comprising the step of oxidating cumene to cumene hydroperoxide in a liquid phase in the presence of an oxidizing agent and of a basic resin, said basic resin, releasing inorganic cations to the reaction environment; wherein all the variables are as defined in the claims.

**Determination of the scope and content of the prior art (M.P.E.P. §2141.01)**

Boncheva et al. teach a process for the preparation of Cumene hydroperoxide by the oxidation of cumene with air in the presence of a weakly-alkaline anionic resin and the decomposition of the Cumene hydroperoxide to phenol and acetone at a temperature of about 115°, while minimizing the production of carbinol.

**Ascertainment of the difference between the prior art and the claims (M.P.E.P. §2141.02)**

Boncheva et al. process for the synthesis of cumene hydroperoxide from cumene differs from the instantly claimed process for the synthesis of cumene hydroperoxide in that Boncheva et al. teach a process that employs weakly-alkaline anionic resin while applicant claims a process that employs basic resin.

**Finding of prima facie obviousness--rational and motivation (M.P.E.P. §2142-2143)**

The instantly claimed process for the synthesis of cumene hydroperoxide would have been suggested to one of ordinary skill because one of ordinary skill wishing to obtain cumene hydroperoxide is taught to employ the process of Boncheva et al.

One of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by varying the process conditions (concentration of the reactants, reaction medium, temperature and pressure) from the teaching of Boncheva et al. to arrive at the instantly claimed method for the synthesis of cumene hydroperoxide, and the decomposition of the Cumene hydroperoxide to phenol and acetone. Said person would have been motivated to practice the teaching of the references cited because they demonstrate that cumene hydroperoxide are useful industrial raw materials. The Examiner notes that variation the reaction conditions, for example, concentration of the reactants, reaction medium, temperature and pressure in a chemical reaction is a well-known chemical practice to optimize the process efficiency of the system and does not constitute a patentable distinction. Additionally, merely

modifying the process conditions such as temperature and concentration is not a patentable modification absent a showing of criticality. In re Aller, 220 F.2d 454, 105 U. S. P. Q. 233 (C. C. P. A. 1955). The instantly claimed invention would therefore have been obvious to one of ordinary skill in the art.

***Allowable Subject Matter***

Claims 5, 6, 14 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is 571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman K. Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Chukwuma O. Nwaonicha, Ph.D.

Patent Examiner

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PRIMARY EXAMINER

  
For

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